



## Workplace issues

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Overcoming the Dangers of Drowsy Driving,

NTSB Forum, Washington DC. October 21<sup>st</sup>, 2014

- Development of BP's drowsy driving prevention programme

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- Key attributes

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- Incident investigation

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- Beyond BP

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# Development of BP's programme



- 2004
  - BP Driving Safety Standard published
    - Rested and alert
    - Fatigue awareness training
      - Fatigue training developed by Prof Jim Horne, Loughborough
        - Delivered globally by trained trainers
        - Still continues in UK in 2014
  - Empowered to stop or break a journey when fatigued

# Development of BP's programme



- 2009
  - Driving Safety Standard reissued as part of BP's integrated Operating Management System, linked to
  - Guidance on Fatigue Management

# Development of BP's programme



- 2010
  - On-line training added as part of an 8-module e-learning package BP FACT (BP Fatigue and Countermeasures Training)
  - Separate driving and supervisor modules

Module 7 Managing Driver Fatigue  
When should you stop driving?

Introduction

Clearly, if you feel fatigued, you should stop driving.

The problem is that when tired, we often don't realise how impaired we are.

By monitoring the physical signs of fatigue, we may be better able to determine when to stop driving.

*Click on the green arrow at the top right of the page to find out which physical signs of fatigue are the most reliable indicators of when to stop driving.*

ALERT

physical signs

cognitive signs

ASLEEP

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# Key attributes - systematic



- BP's Code of Conduct

- Safety

- ‘Be sure that your performance is not impaired, for example by a lack of sleep, alcohol, or any drugs – including prescription or over the counter medication’



# Key attributes - systematic



- BP's Operating Management System

- Transportation

- 'Require that members of the *workforce* driving on BP business be appropriately assessed, licensed, trained and fit to operate the vehicle, be rested and alert, and do not operate any vehicle when *fatigued*



# Key attributes - sustainable



- **No significant change in requirements since 2004**



# Key attributes – continuous improvement

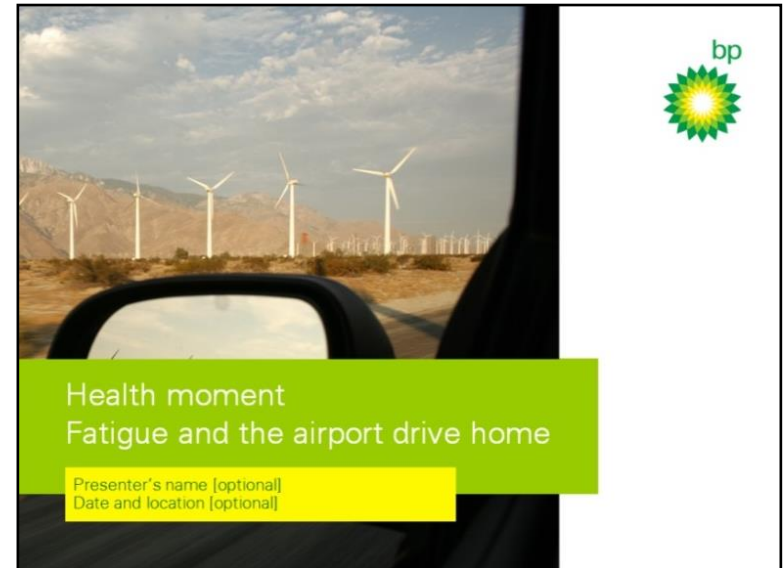


- **2009 Guidance on Fatigue Management**
  - Fatigue risk management programme
  - Fatigue impairment checklist for supervisors
- **2009 Fatigue Management Questionnaire**
  - 10 sections addressing issues ranging from schedule design and training through to incident investigation.

# Key attributes – continuous improvement




- 2010 ‘Fatigue moments’
  - ‘Driver fatigue’
  - ‘A good night’s sleep’
  - ‘Alertness strategies’
  - ‘Fatigue and the airport drive home’



# Key attributes – continuous improvement



- 2010 'Fatigue briefing notes'
  - Topic guidance on a single page
  - Drowsy driving
  - Shift work 1 – 3 nights
  - Shift work – how does it affect me
  - Jet Lag - London to Houston



**Drowsy driving**

We sleep for about a third of our lives. Sleep has a huge effect on how we live and how we think, work and play during the other two thirds. Sleepiness (whether you don't get enough sleep or whether you have a sleep-related health problem) has been the cause of a growing number of road traffic accidents. In the UK it is estimated that at least 10% to 20% of all crashes are caused by sleepy drivers.

**How do sleep-related traffic accidents happen?**  
Most happen between midnight and dawn or in the mid-afternoon (around 2pm to 3pm) when our levels of alertness are at their lowest. Drivers who fall asleep at the wheel are usually male and travelling alone. They tend to drift off the road and crash. Most crashes are rear-end or head-on collisions and sleepy drivers rarely brake or try to swerve. This means that many sleepy drivers are seriously injured or die.

**Who is at risk?**  
The people who are most at risk of an accident caused by sleepiness are those who:

- drive long distances without rest breaks (more than 100 miles);
- drive through the night or mid afternoon;
- drive alone;
- drive on motorways for long periods of time (for more than two hours);
- take medication that makes them sleepy;
- drink alcohol (which makes us sleepy); or
- spend a lot of their time travelling.

Sleep-related crashes are most common in young people (especially men), parents with children living at home and shift workers. Adults aged between 18 and 29 are much more likely to drive while they are sleepy than other age groups. Men are also more likely than women to drive while they are drowsy and almost twice as likely as women to fall asleep at the wheel.

Shift workers are more likely than day workers to drive to or from work while they are sleepy at least a few days every month, particularly after a night shift.

Lack of sleep increases your chances of having a sleep-related crash. People who sleep six to seven hours each night are twice as likely to be involved in a crash as people who sleep for eight hours or more.

Being awake for 18 hours or more means you have the same level of concentration and awareness as somebody who has a blood alcohol content of 50 milligrams in the UK, the legal limit for people to drink and drive is 30 milligrams!

People who have problems sleeping are more at risk of having a car accident. For instance, if you drive while you are tired, you are more likely to become stressed, impatient and drive faster.

**The effects of sleepiness and extreme tiredness**  
Sleepiness and extreme tiredness have a number of effects. Many people who are tired have 'micro-sleeps' (where the person sleeps for literally a few seconds and are usually not aware that they have been asleep). People who have micro-sleeps when driving often drift onto the 'humble strip' (the line that separates the hard shoulder from the main carriageway on a motorway) or edge of the road. Tiredness also means that you react to things more slowly and your judgement and vision are worse. Your brain will also have problems processing information and your short-term memory will get worse. This means you may not be able to understand and remember road signs or directions you are following. Overall, your driving skills will get worse.

**How can I tell if I am getting sleepy?**  
Even if you are not aware that you are sleepy, if your body has not had enough time to rest, you are still at risk. If you experience any of the following, you are at risk of falling asleep.

- Your eyes close or go out of focus.
- You can't stop yawning.
- Your mind begins to wander.
- You can't remember driving the last few miles.
- You miss road signs and junction exits.

If you experience any of the following, you may have already experienced a 'micro-sleep'.

- You have trouble keeping your head up.
- You drift between lanes.
- You drift onto the humble strip or verge.

**What should you do?**

- Make sure you get a good night's sleep before you drive. Most people should get eight hours' sleep.
- Ideally, on long-distance journeys, try to drive with a passenger who has a full and valid driving licence so you can share the driving.
- Make sure you stop regularly, usually every 100 miles or two hours.
- Don't drink any alcohol and take care with medicines. Many medicines make you sleepy or affect how well you drive. Get advice from your doctor or pharmacist when you collect your medicine.

**When you are driving, be aware of how awake you are and stop driving if you think you are in danger of falling asleep. Don't rely on the radio or looking the window to keep you awake. If you are feeling sleepy, do the following.**

1. Find a safe place to stop.
2. Drink two strong cups of filtered (not instant) coffee (caffeine takes about 30 minutes to get into the bloodstream).
3. Have a nap for about 20 to 30 minutes.
4. Drive to a safe place nearby (such as your home or a hotel) and sleep until you feel fully refreshed and ready to drive again.

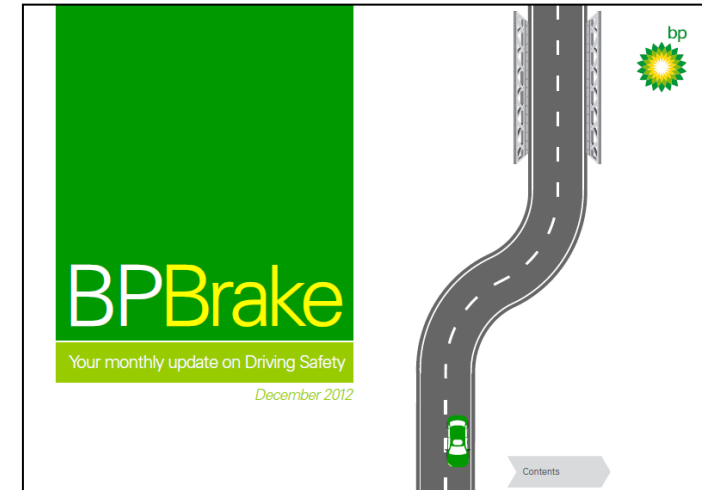
**Crystal Mark 1736B**  
Clearly approved by Plain English Campaign

© June 2008

# Key attributes – continuous improvement



- 2012
  - Group wide communication platform
  - Fatigue Management Questionnaire revised



### BP Fatigue Management Questionnaire

This is your dashboard. From here you can access each of the main sections of the FMQ. You can also jump to the main summary page where all your results are displayed.

Click here to identify Contributors to Fatigue that may be present at your site		← This box will display in Red, Amber or Green depending on the number of fatigue contributors present at your site.
Click here to identify Fatigue Controls that could be implemented at your site		← This box will display in Red, Amber or Green depending on the number of fatigue controls present at your site.
Click here to assess your site's Compliance with the BP-GRP on Fatigue Management		← This box will display a % indicating how well your site is compliant with the BP-GRP on Fatigue Management.

Full Summary of results

Improvement /Action Plan

interpreting your results

instructions guide

Clicking on this icon on any page will bring you back to this page

# Key attributes – continuous improvement



- 2014
  - Additional enhancement to programme
    - Driver fitness programme
      - Focuses on medical issues which impact on fitness to drive
      - In US will be offered as voluntary part of periodic training session
  - 3 ‘safety stand downs’ focused on fatigue

# Key attributes – continuous improvement



- Use of in-vehicle camera system
  - Used in South Africa for 2 years
  - Planned wider roll-out
  - High incidence of micro-sleeps
  - No accidents
  - Treated as a ‘near-miss’
    - Developed coaching model to help drivers



# Incident investigation



- **Structured investigation framework**
  - Based on levels of risk
  - Incorporates the ‘prior sleep/wake’ tool
  - Includes a number of fact sheets to assist investigators

Hazard assessment	Level of risk	Control tool
Were they given a chance to sleep?	Level 1	Working Hours Rules Fatigue modelling
Did they get enough sleep?	Level 2	Monitoring work and rest hours
Are there signs of fatigue-related behaviours?	Level 3	Personal reports Fatigue symptoms checklist

A checklist for investigating fatigue-related incidents

> Getting started



Identifying and investigating fatigue-related incidents

> Fact sheets



# Incident investigation



- **2013**

- Total of 82 Severe Vehicle Accidents across BP

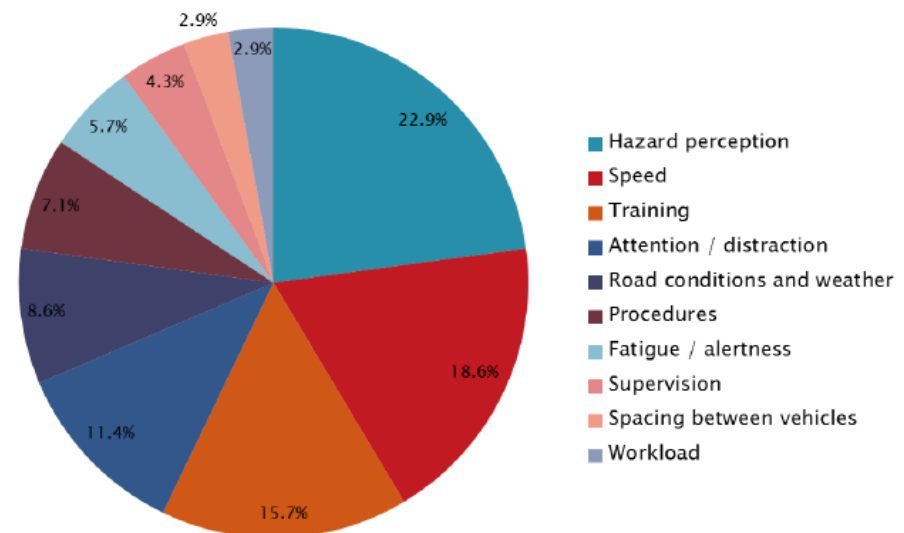
- >90% had some contributory human or behavioural factor

- Detailed review of 32 incidents

- Behaviours

- No 1 situational awareness

- No 7 fatigue





- **ACOEM Presidential Task Force**

## ACOEM GUIDANCE STATEMENT

### Fatigue Risk Management in the Workplace

#### *ACOEM Presidential Task Force on Fatigue Risk Management:*

*Steven E. Lerman, MD, MPH, Evamaria Eskin, MD, MPH,*

*David J. Flower, MBBS, MD, Eugenia C. George, MD,*

*Benjamin Gerson, MD, Natalie Hartenbaum, MD, MPH,*

*Steven R. Hursh, PhD, and Martin Moore-Ede, MD, PhD*

- Managing Fatigue Using a Fatigue Risk Management Plan (FRMP)
  - Energy Institute
  - The guidance was launched in April 2014
  - Publically available on the EI website at <http://www.energyinst.org/>

Managing fatigue using a fatigue risk management plan (FRMP)

- OGP/IPIECA Performance Indicators for Fatigue Risk Management Systems

- The guidance was launched 2013

- Publically available on the IPIECA website at:

<http://www.ipieca.org/Library>



1. Rostered work hours	
<p>Work hours should be rostered to:</p> <ul style="list-style-type: none"> <li>• provide as much sleep opportunity between shifts as possible;</li> <li>• minimize the amount of work performed during 'fatigue hot spots' (e.g. 24:00–06:00); and</li> <li>• minimize consecutive extended shifts that may cause cumulative sleep debt.</li> </ul>	
<p><b>Desired outcomes</b></p> <ul style="list-style-type: none"> <li>• Workers are well rested and fit to begin and complete each shift.</li> </ul>	<p><b>Critical elements</b></p> <ul style="list-style-type: none"> <li>• Rostered work hours provide sufficient time for sleep and recovery between shifts.</li> </ul>
<p><b>Possible leading indicators</b></p> <ul style="list-style-type: none"> <li>• Planned rosters have been adequately risk assessed for fatigue.</li> </ul>	<p><b>Possible lagging indicators</b></p> <ul style="list-style-type: none"> <li>• Evidence of incidents or near misses occurring within periods of the roster, where the likelihood of fatigue-related impairment is increased.</li> </ul>
<p><b>Possible assessment questions</b></p> <ul style="list-style-type: none"> <li>• Taking account of travel time to and from the place of work, and of reasonable domestic and social activities during the planned work period, do the planned rosters allow reasonable likelihood of an opportunity for at least 7 hours' sleep in every 24-hour period?</li> <li>• Has the cumulative impact of sleep debt been considered?</li> <li>• What processes are in place to facilitate a periodic review of the effectiveness of rosters in managing fatigue?</li> <li>• Is there a participative approach to the development of rosters involving stakeholders, e.g. workers and management?</li> <li>• Is worker feedback received on whether they believe the roster provides sufficient opportunity for sleep and recovery?</li> </ul>	
<p><b>Possible supporting leading metrics</b></p> <ul style="list-style-type: none"> <li>• Percentage of rosters that have elevated predicted levels of fatigue (as identified by the organization's risk assessment).</li> <li>• Percentage of each shift that exceeds an action level (as defined by the organization's fatigue risk assessment).</li> <li>• Percentage of shifts where shift swaps have taken place to minimize the adverse impact of fatigue.</li> <li>• The number of workers reporting having a sleep opportunity of less than 6 hours in any 24-hour period.</li> </ul>	
<p><b>Possible supporting lagging metrics</b></p> <ul style="list-style-type: none"> <li>• Percentage of incidents or near misses that occur during periods of the roster where there is an elevated risk of fatigue.</li> <li>• Number of fatigue-related incidents occurring while travelling to or from work, involving employees working rosters associated with elevated predicted levels of fatigue.</li> </ul>	

